10-08-02

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. ET 955219118 US

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Tavis Dion	Schriefer	Carrollton, TX

☐ *Additional inventors are being named on the _______ separately numbered sheets attached hereto*

TITLE OF THE INVENTION (500 characters max)

Electrical or Optical Connector Adapter with Rotational Mechanisms

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☒ Customer Number [ ] *Type Customer Number here* → *Place Customer Number Bar Code Label here* 32197 PATENT TRADEMARK OFFICE

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ENCLOSED APPLICATION PARTS ***(check all that apply)***

☒ Specification *Number of Pages* 7
☒ Drawing(s) *Number of Sheets* 7
☐ Application Data Sheet See 37 CFR 1.76
☐ CD(s), Number
☐ Other (specify)

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27
☒ A check or money order is enclosed to cover the filing fees
☐ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:
☐ Payment by credit card. Form PTO-2038 is attached.

FILING FEE AMOUNT ($) 80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.
☐ No
☐ Yes, the name of the U.S. Government agency and the Government contract number are ________________

Respectfully submitted,

SIGNATURE [signature]

Date 7 Oct 2002

TYPED or PRINTED NAME Tavis D. Schriefer

REGISTRATION NO. *(if appropriate)*
Docket Number

TELEPHONE 972-395-9600

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1 51. The information is used by the public to file (and by the PTO to process) a provisional application Confidentiality is governed by 35 U.S C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden. should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

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FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT	($)

Complete if Known	
Application Number	
Filing Date	7 Oct 2002
First Named Inventor	Tavis D. Schriefer
Examiner Name	
Group Art Unit	
Attorney Docket No.	

METHOD OF PAYMENT

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number:

Deposit Account Name:

☐ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1 17

☐ Applicant claims small entity status See 37 CFR 1 27

2. ☒ **Payment Enclosed:**

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	(80)	Provisional filing fee	80

SUBTOTAL (1) ($) 80.00

2. EXTRA CLAIM FEES

			Extra Claims		Fee from below		Fee Paid
Total Claims		-20** =		X		=	
Independent Claims		- 3** =		X		=	
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater. For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1 17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1 129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) ______________

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($)

SUBMITTED BY				Complete (*if applicable*)	
Name (Print/Type)	Tavis D. Schriefer	Registration No. (Attorney/Agent)		Telephone	972-395-9600
Signature	[signature]			Date	7 Oct 2002

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Provisional Patent Application of

Tavis D. Schriefer

for

Electrical or Optical Connector Adapter with Rotational Mechanisms

ABSTRACT

FIG. 1 relates to an invention of an adjustable electrical or optical connector adapter that is typically used to interface a host device with a peripheral device or cable. The adjustable connector rotates in either of two planes and will allow the peripheral device to assume a wide variety of orientations with respect to the host device.

This PPA is inclusive of material submitted in PPA #60/400792, dated August 2, 2002.

CLAIMS

An adjustable connector comprised of:

1. Electrical or optical connectors with the following characteristics:

a first electrical or optical connector that interfaces with a host device;

a second electrical or optical connector that interfaces with a peripheral device, power source or cable and maintains electrical or optical continuity with the first connector;

2. Rotational mechanisms of the following types:

a housing that includes two rotational mechanisms between the first and second connectors that allow rotation in two planes while maintaining electrical or optical continuity between the first and second connectors, rotation may occur in either plane alone or both simultaneously;

a device in both planes for limiting the degree of rotation of the rotational mechanisms in each

plane;

methods for providing positional stability of both rotating mechanisms.

a first rotational mechanism in the form of a hinge;

a second rotational mechanism in the form of two mating planar surfaces;

first and second rotational mechanisms will have rotational capabilities along with positional stability resistance characteristics such that the torque required to initiate rotation of the joint is greater than the torsional forces created by the weight and orientation of any attached cables or devices in a static situation. These characteristics could be achieved with indexing surface features along with mating radial serrations providing an indexing function, inherent surface friction between mating parts or tension produced by springs or levers.

3. Alternate embodiments of rotational mechanisms:

where one of the two rotational mechanisms are manufactured in fixed orientations in order to provide solutions to specific problems of interfacing certain host devices with certain peripheral devices;

where rotational control in all planes is achieved by use of a ball and socket joint;

where rotational control in all planes is achieved by use of a goose-neck or flexible jointed pipe,

where one or both of the previously described rotational mechanisms are built into a connector that is attached to a cable, and does not take the form of a separate connector adapter, the connector itself could assume any of the forms mentioned in these claims,

where one or both of the previously described rotational mechanisms are built into a connector that is part of an electrical device, either host or peripheral, and does not take the form of a

separate connector adapter, the connector itself could assume any of the forms mentioned in these claims..

4. Electrical or optical connectors in claim 1 of a variety of types:

male or female forms;

USB, High Speed USB (2.0), FireWire (IEEE 1394 and i.LINK), Video Monitor, RS232, fiber optic or similar specifications that are typically used to define the physical, electrical and /or optical communications characteristics between host and peripheral devices. This includes specifications for electrical connections for the purpose of data and/or power transmission.

5 A housing of the connectors in claim 1 produced from vinyl, rubber, plastic, polypropylene or other materials suitable for an electrical or optical connector housing.

6. A flexible conductor suitable for passing electrical or optical signals, located within the housing defined in claim 5, such that the flexible cable allows rotation to occur in two planes of the rotational mechanisms as defined in claims 2 and 3, while maintaining electrical or optical connectivity between the first and second connector.

7. An embodiment of the adjustable connector that has two or more secondary connectors, so to act as a hub for multiple peripheral devices, all communicating electrically or optically with the host device.

DESCRIPTION

A variety of computer peripheral devices are designed to be directly interfaced to host devices, such as computers. Many times this results in an awkward, insecure, or precarious orientation of the peripheral device in relation to the host device. In some cases the peripheral device cannot be successfully interfaced to the host device due to the physical conflicts between the housing of the host device and the peripheral device. In other cases the physical characteristics of the

peripheral device when interfaced with the host device, prevents the interface of other peripheral devices to the host device. The adjustable connector overcomes these conflicts by allowing rotation in two planes. The adjustable connector could assume the form of a connector adapter, or it could be built-into cables or electrical equipment, either host or peripheral.

Peripheral devices that will benefit from the adjustable connector include, but are not limited to: data storage devices, BlueTooth or other communication devices, security devices, lights, fans, cables, antennas, and power adapters.

OPERATION

FIG 1a depicts the side view of the preferred embodiment that complies with USB and USB 2.0 standards. Connector 10, USB type-A, interfaces with a host device. Rotational mechanism 12 has a +/-90° range of motion in a vertical manner in relation to connector 10.
Second rotational mechanism 14 allows rotation of the second connector 16 in either direction on one plane up to 120°.

FIG 1b depicts the top view of the preferred embodiment that complies with USB and USB 2.0 standards. Connector 10, USB type-A, interfaces with a host device. Rotational mechanism 14 has a +/-120° range of motion in a horizontal manner in relation to connector 10.

FIG 1c and 1d depict an alternate construction with similar functionality to FIG 1a and 1b. Rotational mechanism 20 has a +/-90° range of motion in a vertical manner in relation to connector 10. Second rotational mechanism 22 allows rotation of the second connector 16 in either direction on one plane with a range of up to 359°.

FIG 2a depicts a peripheral device interfaced to a host computer without the use of the adjustable connector.

FIG 2b depicts a peripheral device interfaced to a host computer with the aid of the adjustable connector. In this case, mechanism 12 (hidden) is rotated 90° and mechanism 14 is rotated 90°. This illustrates the benefit of preventing the peripheral device from protruding significantly away

from the host computer, placing the peripheral device in an awkward and precarious position where it could be easily damaged.

FIG 3a depicts the side view of an additional embodiment of the adjustable connector that has two secondary connectors 16 & 20 acting as a hub for two peripheral devices. This embodiment contains all the same features as the adjustable connector in FIG 1a, with the added functionality of an additional rotational mechanism 18 and the associated secondary connector 20.

FIG 3b depicts the top view of the additional embodiment of the adjustable connector that has two secondary connectors 16 & 20 acting as a hub for two peripheral devices. This embodiment contains all the same features as the adjustable connector in FIG 1b, with the additional rotational mechanism 18 able to operate independently from rotational mechanism 14. This allows for the peripheral devices to interface into input connectors 16 & 20 and be positioned in different and independent fashions.

FIG 3c illustrates the additional embodiment of the adjustable connector with two peripheral USB cables interfacing into input connectors 16 & 20. In this case, mechanism 12 (hidden) is rotated 90° in a vertical manner in relation to connector 10, mechanism 14 is rotated 90° in a horizontal manner in relation to connector 10 and mechanism 18 is rotated 90° in the opposite direction of mechanism 14.

FIG 4 illustrates an alternate embodiment of the rotational mechanism where one of the two rotational mechanisms is manufactured in fixed orientation..

FIG 5a illustrates an alternate embodiment of the rotational mechanism where rotational control in all planes is achieved by use of a goose-neck or flexible jointed pipe.

FIG 5b illustrates an alternate embodiment of the rotational mechanism, where rotational control in all planes is achieved by use of a goose-neck or flexible jointed pipe, in this case with two peripheral connectors.

FIG 6 illustrates an alternate embodiment of the rotational mechanism where rotational control in all planes is achieved by use of a ball and socket joint.

FIG 7a illustrates an alternate embodiment, where a rotational mechanism of the first type is built into a connector that is attached to a cable, and does not take the form of a separate connector adapter.

FIG 7b is a device similar to FIG 7a. It illustrates an alternate embodiment, where a rotational mechanism of the first type is built into a connector that is attached to a cable, and does not take the form of a separate connector adapter, but the construction of rotational mechanism is simplified.

FIG 8a, 8b and 8c illustrate an alternate embodiment, where two rotational mechanisms are built into a connector that is attached to a cable, and does no take the form of a separate connector adapter. This allows rotational orientation in two planes. The first rotational mechanism has a rotational capability of +/- 90°. The second rotational mechanism has a rotational capability of 359°.

FIG 9 illustrates a device similar to FIG 8a. It is an alternate construction that achieves the same result. Two rotational mechanisms are built into a connector that is attached to a cable, and does no take the form of a separate connector adapter. This allows rotational orientation in two planes. The first rotational mechanism has a rotational capability of +/- 90°. The second rotational mechanism has a rotational capability of 359°.

FIG 10a and 10b illustrate a typical peripheral device that does not contain any mechanisms to provide rotational capabilities.

FIG 11a, 11b and 11c illustrates an alternate embodiment, where the rotational mechanism is built into a connector that is part of an electrical peripheral device, and does not take the form of a separate connector adapter. In this particular configuration, the connector has rotational capabilities in one plane, while remaining contained within the peripheral device.

FIG 12a, 12b and 12c illustrate a device similar to FIG 11a, 11b and 11c. It is an alternate construction that achieves the same result. A rotational mechanism is built into a connector that is part of an electrical peripheral device, and does not take the form of a separate connector adapter. In this particular configuration, the connector has rotational capabilities in one plane, up to 359°, while remaining contained within the peripheral device.

FIG 13 and 14 illustrate alternate embodiments, where the two rotational mechanisms are built into a connector that is part of an electrical peripheral device, and does not take the form of a separate connector adapter. This allows rotational orientation in two planes.

FIG 15 and 16 illustrate alternate embodiments where the rotational mechanism is built into a host device. In FIG 15, the rotational mechanism has one connectors, with FIG 16 having two connectors. Both embodiments allow rotational capability in one plane only, up to 359°.

REFERENCED NUMERALS IN DRAWINGS

10 host device connector
12 vertical rotational mechanism
14 horizontal rotational mechanism
16 peripheral device connector
18 additional horizontal rotational mechanism
20 additional peripheral device connector
22 second rotational mechanism

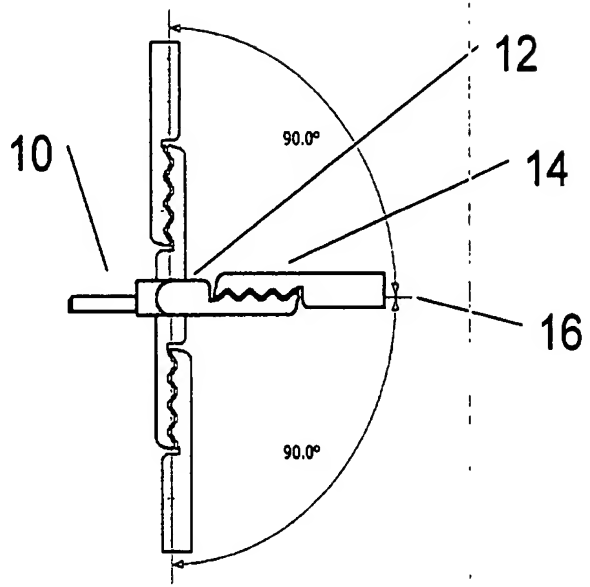


FIGURE 1a

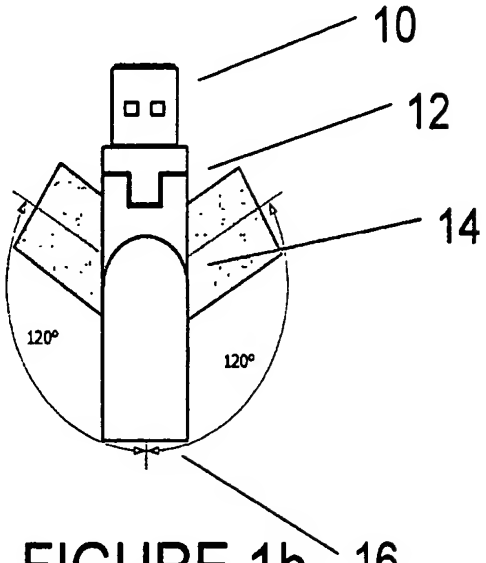


FIGURE 1b

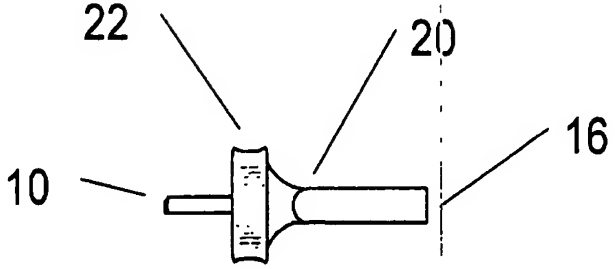


FIGURE 1c

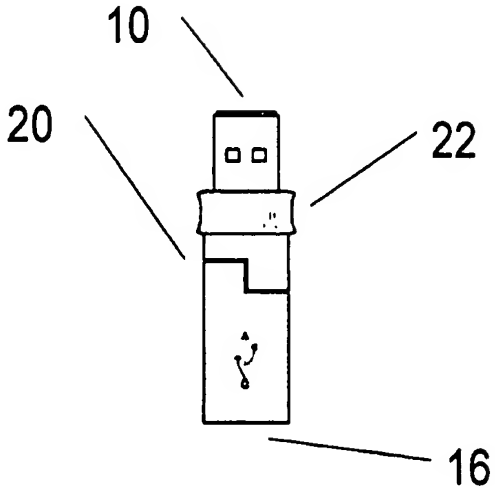


FIGURE 1d

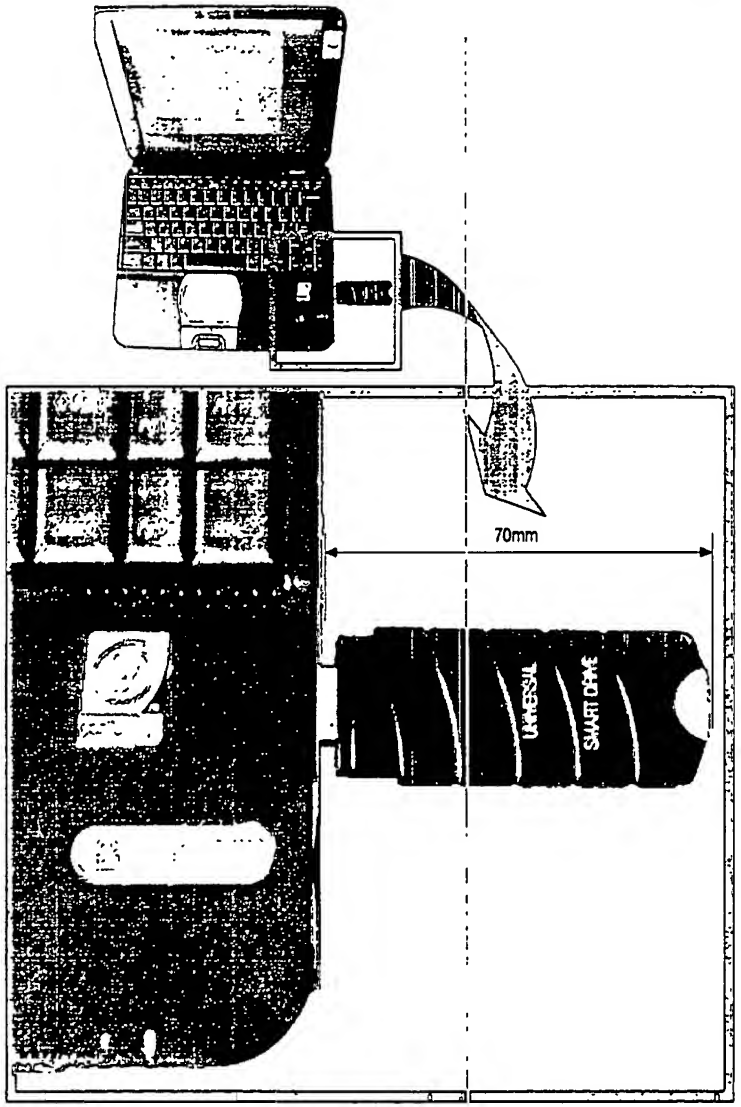


FIGURE 2a

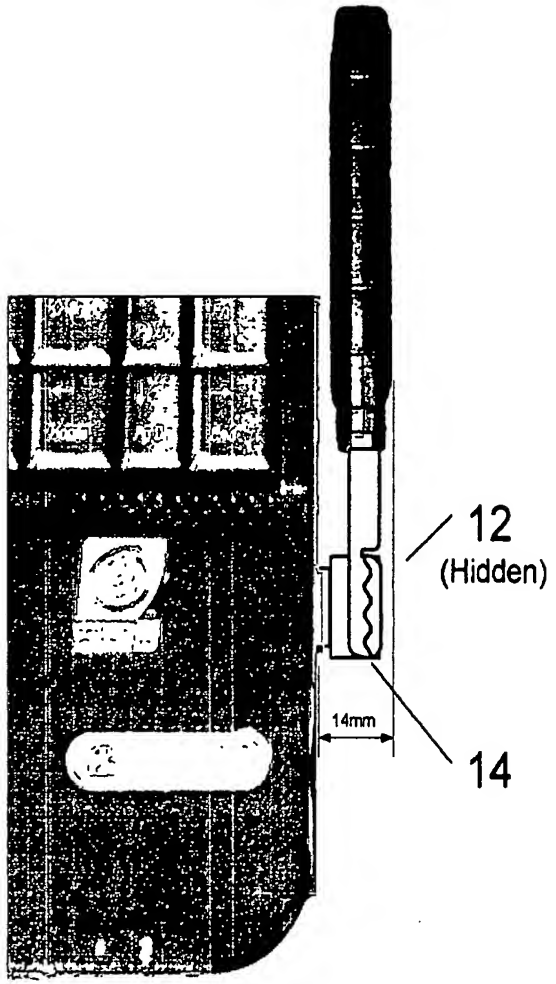


FIGURE 2b

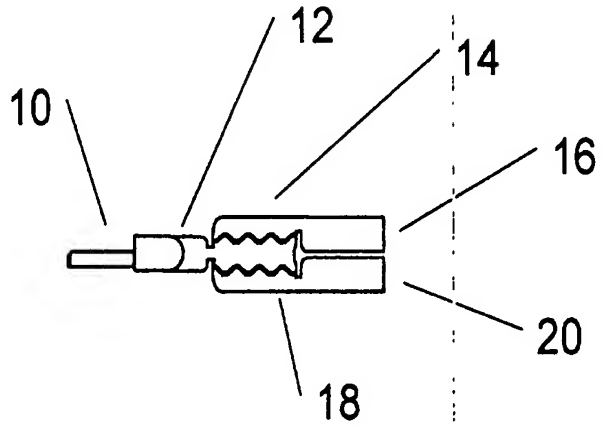


FIGURE 3a

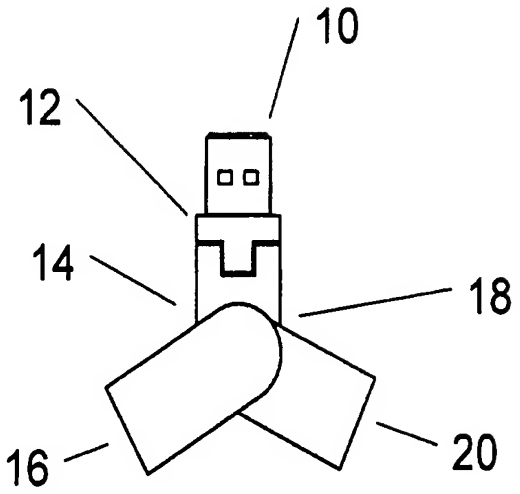


FIGURE 3b

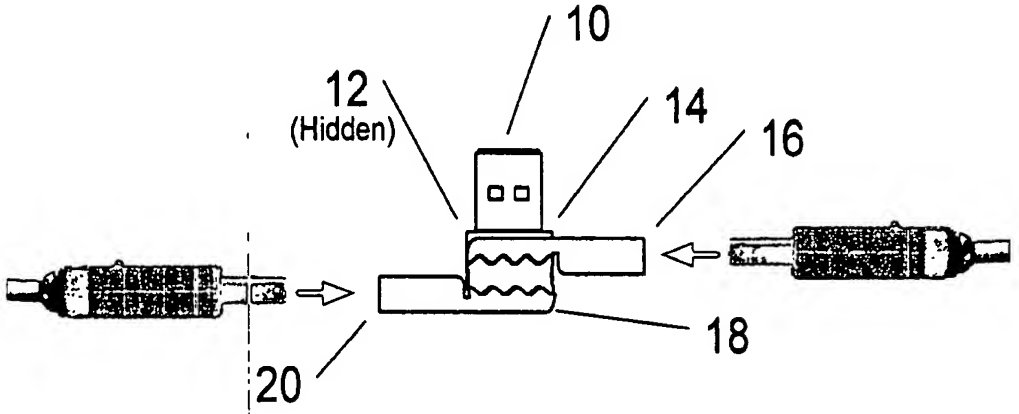


FIGURE 3c

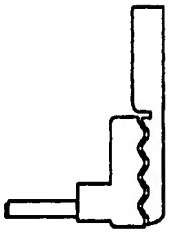


FIGURE 4

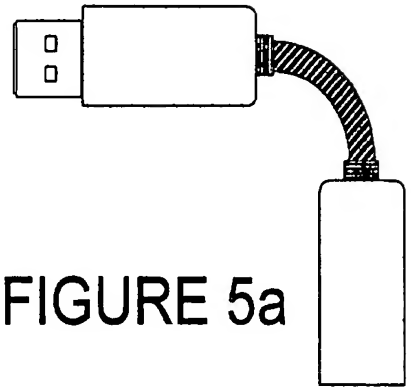


FIGURE 5a

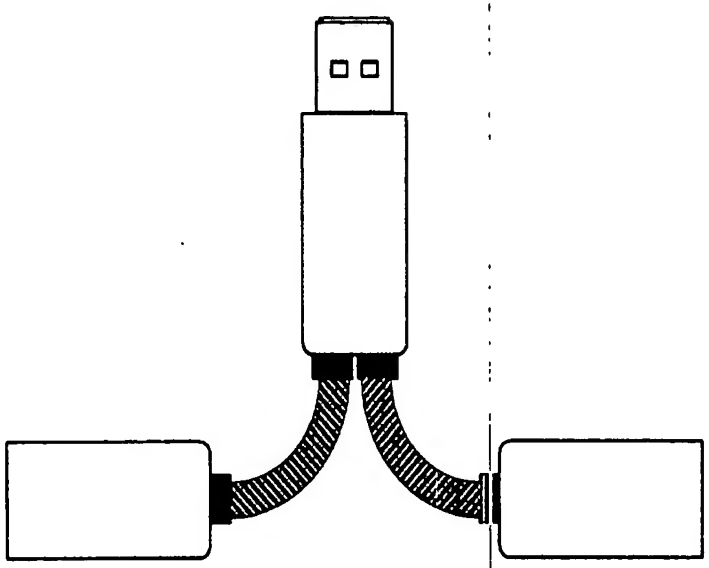


FIGURE 5b

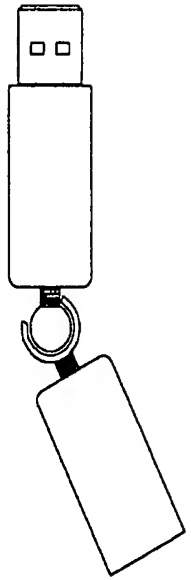


FIGURE 6

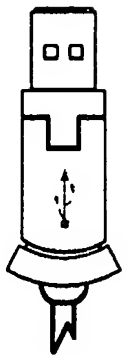


FIGURE 7a

FIGURE 7b

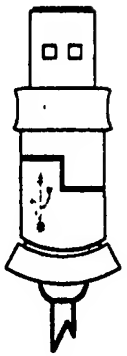


FIGURE 8a

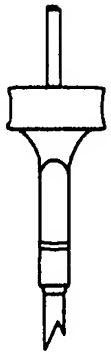


FIGURE 8b

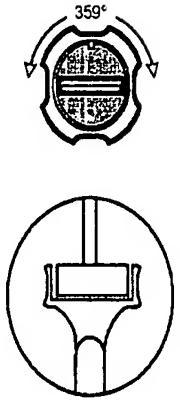


FIGURE 8c

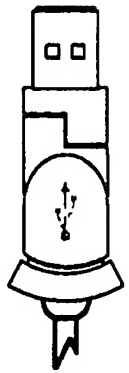


FIGURE 9

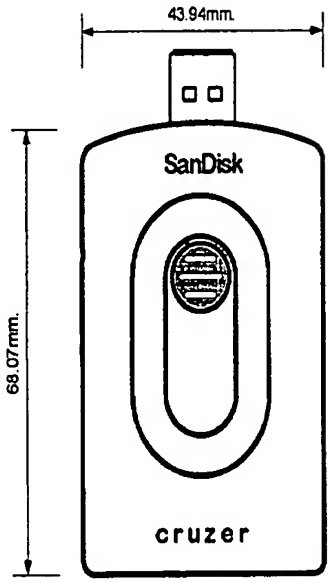


FIGURE 10a

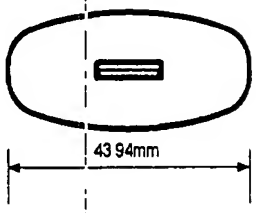
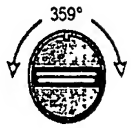


FIGURE 10b

FIGURE 11a



359° Rotational USB Component

FIGURE 11b

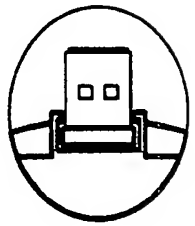


FIGURE 11c

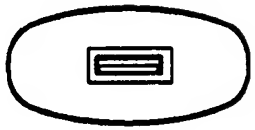


FIGURE 12a

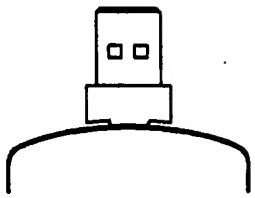


FIGURE 12b

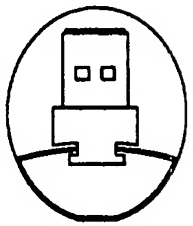


FIGURE 12c

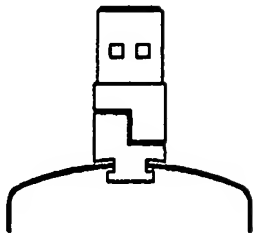


FIGURE 13

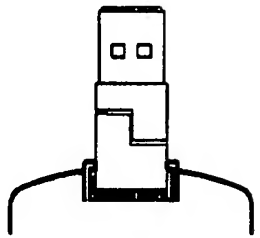


FIGURE 14

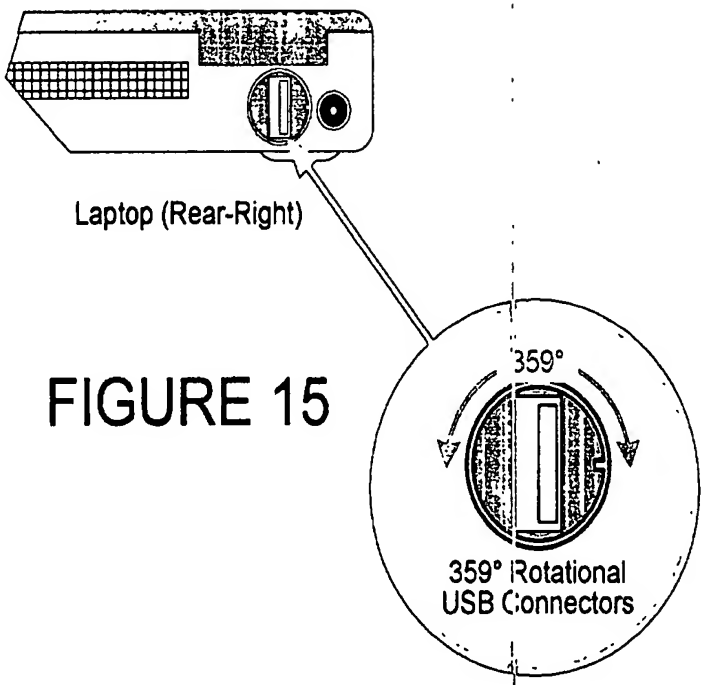


FIGURE 15

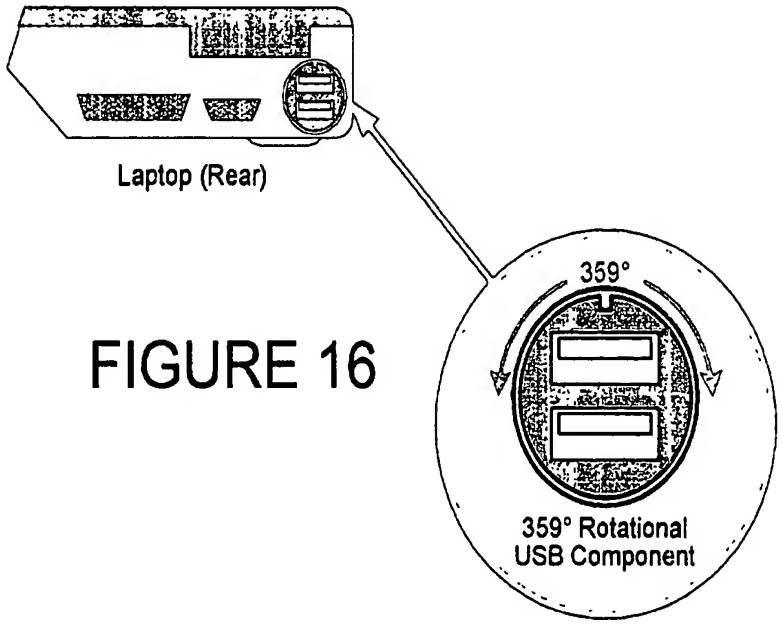


FIGURE 16